

REMARKS

This Response is submitted in reply to a Office Action mailed on December 16, 2008. Claim 6-10, 12-14, and 16-21 are currently pending. Claims 6-10, 12-14, and 16-21 stand rejected under 35 U.S.C. §103(a). In response, Applicants respectfully traverse the rejections with respect to claims 6-10, 12-14 and 16-21, and add claims 22 and 23. Support for the new claims can be found throughout the specification, and including but not limited to paragraphs [0032], [0075], [0096], and [0015]. No new material has been added by way of these amendments. Applicants believe that the rejections should be withdrawn at least in view of the reasons detailed below. The Director is authorized to charge any fees which may be required, or to credit any overpayment to Deposit Account No. 02-1818. If such a withdrawal is made, please indicate the Attorney Docket No. 112857-424 on the account statement.

In the Office Action, claims 6-9, 12-13 and 16-21 are rejected under §103(a) as being unpatentable over JP 2002-075368 ("*Yamaura*") in view of WO 00/02280 ("*Kurose*") using U.S. Patent No. 6,824,924 as an English translation. Independent claims 6 and 15 are directed to a positive active material, whereas independent claims 12 and 19 are directed to a non-aqueous electrolyte secondary battery. Common to all four independent claims is the recited lithium nickelate formula where M' is selected from the group consisting of Fe, Mn, Cu, Zn, Sn, Ga, Cr, V, Ti, Mg, Ca, Sr, and mixtures thereof, and an olivine compound an olivine compound having a formula Li_xMPO_4 , and M is selected from a group consisting of Fe, Mn, Co, Ni, Cu, Zn, Mg. All four independent claims also require the limitation that the content of the olivine compound in the positive active material range from about 5 wt % to about 50 wt%. Claims 9 and 13 further specify that the lithium nickelate is LiNiO_2 .

Applicants contend that the claim element of a specific ratio, set forth in the independent claims requiring about 5 wt.% to about 50 wt.%, is neither present in the references nor obvious in view of the references. *Yamaura* does not teach or suggest this range. The only arguable support it has for the range is a single data point in paragraph [0054], where the LiFePO_4 is present in 96.8 wt.% versus the nickelate. As the Applicants asserted previously, this value is not remotely close to the claimed range, and the Patent Office does not disagree. However, the Patent Office contends that it is obvious to find the optimum value of a results effective variable because this involves only routine skill in the art. Applicants respectfully disagree.

First, the Patent Office is asserting that it's obvious to combine the different compounds from the two references and that its also obvious after combining the two compounds to assume that the range in one of the references is close enough. Applicants assert that the multiple presumptions here are improper.

Second, and more significantly, Applicants assert that *Yamaura* did not recognize that the ratio of LiFePO_4 to nickelate as a results effective variable. The rule from MPEP 2144.05 IIB (cited by the Patent Office in the Final Office Action and referred to in the Advisory Action) is that a particular parameter must first be recognized as a results effective variable before the determination of workable ranges of the variable can be characterized as routine experimentation. Significantly, this must be recognized in the cited reference. In this instance, *Yamaura's* variable was the application of stirring conditions to achieve a temperature between 35 and 45 °C. The stirring and temperature profile of the mixture was the results effective variable in *Yamaura*, and the ratio of LiFePO_4 to nickelate was not changed. See *Yamaura*, [0039]-[0043], and Examples in [0052]-[0070]. Applicants further note that this reasoning applies equally to new claims 22 and 23, wherein the limitation of the ratio of olivinic composition equally applies. Therefore, Applicants assert that the claimed range is not obvious because it was not recognized as the results effective variable in *Yamaura*. At least for these reasons, Applicants respectfully request that the rejection be withdrawn.

More broadly, Applicants assert that the combination of *Yamaura* and *Kurose* does not meet each and every limitation of the claimed invention. *Yamaura* discloses a battery with an anode material of the general formula $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$, where M is at least one of Al, B, Co. This is clearly different from the nickelate compound as claimed in claims 6, 12, 18 and 21 and as further defined in claims 9 and 13. In contrast, *Yamaura* discloses a battery with an anode material of the general formula $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$, where M is at least one of Al, B, Co.

To rectify this issue, the Patent Office relies on *Kurose* to supply the missing LiNiO_2 , but Applicants assert that this combination is improper because the combination of references does not teach the claimed invention. *Yamaura* teaches a combination of two metal compounds, the nickelate and LiFePO_4 , with the LiFePO_4 covering the faces of the nickelate. In contrast, *Kurose* teaches the use of a crushed expanded graphite as a conductive agent to increase the performance of the active material. That active material can be a variety of lithium composite oxides. The combination of *Kurose* and *Yamaura* would be to use crushed expanded graphite in combination

with the cathode lithium nickelates that are at the heart of *Yamaura's* invention. This does not lead to the claimed invention. Alternatively, if the Patent Office is only claiming that instead of using the mixed metal nickelate as specified by *Yamaura*, it is selecting LiNiO_2 as a single compound with which to modify the *Yamaura* disclosure, then the combination is improper because it's selectively picking and choosing elements from different references based on the Applicants' own teaching.

In addition, the Patent Office asserts that *Yamaura's* disclosure of $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$ particles with a median size of $11.458\text{ }\mu\text{m}$ and LiFePO_4 particles with a median size of $0.185\text{ }\mu\text{m}$ meets the coating thickness limitation present in claims 8, 18, and 21. Applicants respectfully disagree. Applicants note that claims 8, 18 and 21 contain a limitation directed to the thickness of the olivine compound on the nickelate of $0.1\text{ }\mu\text{m}$ to about $10\text{ }\mu\text{m}$. Nothing in *Yamaura* discloses any information as to the LiFePO_4 thickness of the layer. In order to meet that presumption, the Patent Office is asserting that a single layer of LiFePO_4 is present in the reference, but no teaching of a single layer is present in the reference. The vast amount of LiFePO_4 in the reference in fact suggests the contrary. Applicants, in contrast, describe in the specification how particles are distributed around the core and contribute to the specifically claimed thickness values, while at the same time not producing so thick a layer as to reduce charge/discharge capacities, and therefore lower energy density per volume. [0050]-[0054].

Therefore, Applicants respectfully submit that the obviousness rejection in view of *Yamaura* and *Kurose* be withdrawn for at least these reasons.

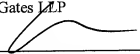
In the Office Action, claims 10 and 14 stand rejected under §103(a) as obvious in view of the combination of *Yamaura* and *Kurose*, and further in view of U.S. Patent No. 6,391,493 ("*Goodenough*"). The Patent Office relies on *Goodenough* for the limitation of olivine compounds of the formula LiMnPO_4 . Applicants note that nothing in *Goodenough* teaches adding the olivine compounds to another metal oxide, particularly a lithium nickelate of the claimed invention, and does not teach a ratio of about 5 wt% to about 50 wt % olivine compound to nickelate compound. For this reason alone, it does not remedy the deficiencies of *Yamaura* and *Kurose* discussed above. Furthermore, the Patent Office uses the combination of three references to reach claims 10 and 14, and improperly relies on the teachings in the Applicants' specification to reach the appropriate combination of elements. For these reasons, Applicants request that the rejections of claims 10 and 14 be withdrawn.

For at least the foregoing reasons, Applicants believe that the present application is in condition for allowance.

Respectfully submitted,

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